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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/736,790	12/14/2000	Tomas Nordstrom	S1022/8495	6611

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EXAMINER	
BAYARD, EMMANUEL	

ART UNIT	PAPER NUMBER
2631	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/736,790	NORDSTROM ET AL.	
	Examiner	Art Unit	
	Emmanuel Bayard	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,7,8,11-20 and 23-31* is/are rejected.

7)☒ Claim(s) *3-6,9,10,21,22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2,4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the abstract should be limited to a single paragraph on a separate sheet within the range of 50 to 150 words. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claim 3 is objected to because of the following informalities: in line 9, before inverted, replace "the" with –an--. Appropriate correction is required.

3. Claim 9 is objected to because of the following informalities: in line 2, delete "the" before transfer matrices. Appropriate correction is required.

4. Claim 23 is objected to because of the following informalities: in line 6, replace "modems" by –modem--. Appropriate correction is required.

5. Claim 10 is likewise objected because they depend on a base objected claim.

Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 12-18, 23-27 and 30-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 12 recites the limitation "the plurality of transmissions" in line 4. There is insufficient antecedent basis for this limitation in the claim.

9. Claim 12 recites the limitation "the modems" in line 6. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 23 recites the limitation "the plurality of transmission channels" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim.

11. Claim 30 recites the limitation "the inverse H-1 up" in line 2. There is insufficient antecedent basis for this limitation in the claim.

12. Claims 13-18 and 24-27, 31 are likewise rejected because they depend on a base rejected claim.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 7-8, 11-14, 19-20, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaiwad et al U.S. patent No 6,317,495 B1 in view of Ferreira U.S. Patent No 5,787,746.

As per claims 1, 12 Gaikwad et al discloses a far-end cross talk canceling circuit for a digital subscriber line transmission system, said transmission system comprising a plurality of line termination modems transmitting discrete multitone symbols to corresponding network termination modems over a plurality of transmission channels (see abstract and fig.2 and col.3,

lines 40-60 and col.4, lines 30-35 and col.5, lines 2-10 and col.8, lines 30-60 and col.13, lines 67-col.14, lines 1-5).

However Gaikwad et al does not teaches a FEXT (far-end cross talk) comprising pre-compensation means multiplying, before transmission, a vector S = (Si), i = 1 to n, by a pre-compensation matrix such that the matrix product H*M is diagonal, H being a transfer matrix of the plurality of transmission channels defined by R = H*S, where R = (Ri), i = 1 to n, is the vector of the digital transmission symbols Ri respectively received by the modems.

Ferriera teaches pre-compensation means multiplying, before transmission, a vector S = (Si), i = 1 to n, by a pre-compensation matrix such that the matrix product H*M is diagonal, H being a transfer matrix of the plurality of transmission channels defined by R = H*S, where R = (Ri), i = 1 to n, is the vector of the digital transmission symbols Ri respectively received (see col.5, lines 24-40 and col.6, lines 40-67 and col.7, lines 1-30).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Ferreira into Gaikwad as to produce adjusted drive signals that result in faster responses of the rolling mill to change in the exit coil temperature and interstand tension set point commands as taught by Ferreira (see col.7, lines 8-11).

As per claim 2, Gaikwad does teach a storing means (see fig.7 element 112). Furthermore implement such memory for storing said transfer matrix would have been obvious to one skilled in the art as to accurately retrieve vector coefficients free and subsequently canceling cross-talk in the vector. In addition Ferreira teaches an inversion means (see col.6, lines 54-57). Furthermore implementing such inversion for inverting said transfer matrix and providing the

pre-compensation means with the inverted matrix would have been obvious to one skilled in the art as to accurately plot the transfer function matrix.

As per claims 7, 19, 23, Gaikwad et al far-end cross-talk canceling method for a digital subscriber line transmission system, said transmission system comprising a plurality of line termination modems transmitting discrete multi-tone symbols Si to corresponding network termination modems over n transmission channels, wherein a vector S = (SO, i = 1 to n, is multiplied, before transmission (see abstract and fig.2 and col.3, lines 40-60 and col.4, lines 30-35 and col.5, lines 2-10 and col.8, lines 30-60 and col.13, lines 67-col.14, lines 1-5).

However Gaikwad does not teach a pre-compensation matrix M such that the matrix product H*M is diagonal, H being a transfer matrix of the n transmission channels defined by R = 1-1*S, where R = (Ri), i = 1 to n, is the vector of the discrete multi-tone symbols Ri respectively received by the modems.

Ferreira teaches a pre-compensation matrix M such that the matrix product H*M is diagonal, H being a transfer matrix of the n transmission channels defined by R = 1-1*S, where R = (Ri), i = 1 to n, is the vector of the discrete multi-tone symbols Ri respectively received by the modems (see col.5, lines 24-40 and col.6, lines 40-67 and col.7, lines 1-30).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Ferreira into Gaikwad as to produce adjusted drive signals that result in faster responses of the rolling mill to change in the exit coil temperature and interstand tension set point commands as taught by Ferreira (see col.7, lines 8-11).

As per claims 8, 13, 24 Gaikwad does teach a storing means (see fig.7 element 112). Furthermore implement such memory for storing said transfer matrix would have been obvious to one skilled in the art as to accurately retrieve vector coefficients free and subsequently canceling cross-talk in the vector. In addition Ferreira teaches an inversion means (see col.6, lines 54-57). Furthermore implementing such inversion for inverting said transfer matrix and providing the pre-compensation means with the inverted matrix would have been obvious to one skilled in the art as to accurately plot the transfer function matrix.

As per claims 11, 14, 25, the far-end cross-talk canceling circuit of Gaiokwad a storing means is organized in planes as to accurately plot each vector coefficients in a specified location for generating the best cross-talk cancellation.

As per claim 20, Ferreira teaches an inversion means (see col.6, lines 54-57). Furthermore implementing such inversion for inverting said transfer matrix and providing the pre-compensation means with the inverted matrix would have been obvious to one skilled in the art as to accurately plot the transfer function matrix.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claim 28 is rejected under 35 U.S.C. 102(b) as being anticipated by Betts et al U.S. patent No 5,659,581.

As per claim 28, Betts et al discloses a data transmission system comprising a plurality of line transmission modems transmitting discrete multi-tone symbols Si to corresponding network termination modems over n transmission channels, including means for pre-compensating for far-end cross-talk (see figs 1-2 and col.3, lines 15-16 and col.5, lines 51-52).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beets et al in view of Ferreira U.S. patent 5,787,746.

As per claim 29, Betts et al teaches all the features of the claimed invention except the means for pre-compensating for far-end cross-talk further comprise means for multiplying, before transmission, a vector S = (Si), i = 1 to n, by a pre-compensation matrix M such that the diagonal of the product equals H*M, where H is a transfer matrix of the plurality of transmission channels defined by R = H*S, where R = (Ri), i = 1 to n, is the vector of the digital transmission symbols Ri respectively received by the modems.

Ferreira teaches pre-compensation means multiplying, before transmission, a vector S = (Si), i = 1 to n, by a pre-compensation matrix such that the matrix product H*M is diagonal, H being a transfer matrix of the plurality of transmission channels defined by R = H*S, where R = (Ri), i = 1 to n, is the vector of the digital transmission symbols Ri respectively received (see col.5, lines 24-40 and col.6, lines 40-67 and col.7, lines 1-30).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Ferreira into Betts as to produce adjusted drive signals that result in faster responses of the rolling mill to change in the exit coil temperature and interstand tension set point commands as taught by Ferreira (see col.7, lines 8-11).

As per claim 30, Ferreira teaches an inversion means (see col.6, lines 54-57). Furthermore implementing such inversion into Betts for inverting said transfer matrix and providing the pre-compensation means with the inverted matrix would have been obvious to one skilled in the art as to accurately plot the transfer function matrix.

As per claim 31, Betts et al would include a storing means. Furthermore implement such storing means for storing said transfer matrix would have been obvious to one skilled in the art as to accurately retrieve vector coefficients free and subsequently canceling cross-talk in the vector.

Allowable Subject Matter

18. Claims **3-6,9,10, 21 *and 22 are*** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. Claims 15-18, 26-27 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lange U.S. Patent No 6,321,212 B1 teaches financial products.

Chun U.S. Patent No 6,307,889 B1 teaches a method for fast initialization.

Tung U.S. patent No 4,769,766 teaches a robust model reference.

Chimoto et al U.S. Patent No 5,838,383 teaches a multimedia television receiver.

Pal U.S. patent No 5,481,565 teaches a method and apparatus for channel equalization.

Ohyu U.S. patent No 5,668,472 teaches a multi-channel flux measuring apparatus.

Kresch et al U.S. Patent No 6,125,212 teaches an explicit DST-based filter.

Nelson et al U.S. Patent no 5,949,894 teaches adaptive audio systems.

Gardner U.S. Patent No 6,243,476 teaches a method and apparatus for producing binaural audio.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 703 308-9573. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 703 306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Emmanuel Bayard
Primary Examiner
Art Unit 2631

Wednesday, February 18, 2004